Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PIÑEY BRANCH (D. C.) QUARRY WORKSHOP AND ITS IMPLEMENTS.[1]

By Thomas Wilson.[2]

(Continued from page 885.)

II.

Mr. Holmes' paper comprises 26 printed pages. The first part is occupied with a description and statement of facts; the second part is as I have shown made up of theory, assumption, opinion. I have examined them sufficiently to show their want of value. But the climax is reserved to the closing portion, for, commencing on page 19 and continuing 8 pages is a chapter relating to the age of the workshop and the race of the men who worked it. Mr. Holmes' conclusion is that though the quarry is prehistoric the age is not great and the race was the Modern Indian. This he argues with profundity, going into the racial question in detail and with great elaboration.

I decline to argue these propositions. I am appalled at the temerity as well as the dogmatism with which he decides these abstruse questions. He is a gentleman for whom I have the highest regard. I have known him well and favorably for many years. He has studied and written upon art products and art evolution and their relation with prehistoric man, in a philosophical and artistic strain which has done credit to his logic, and been as much benefit to art as to archæology. But Sir John Lubbock, Sir John Evans, Prof. Tylor, Sophus Müller, Hildebrand, Montellius, Naidallac, Hamy, de Mortillet and Cartailhac and the host of eminent Europeans, archæologists and anthropologists, of whom Keane is the latest author, who have spent their lives in the study of this science, have not ventured upon the determination of these questions of prehistoric ages and races. with the confidence of Mr. Holmes, and certainly they do not decide these important questions with even a fraction of the satisfaction and certainty which seems to have inspired him.

---

[1] Read before the Anthropological Society, Tuesday Evening, December 4, 1894.

[2] Curator of Prehistoric Anthropology, U. S. National Museum, Washington, D. C.

Mr. Holmes did not content himself with the things of today which he saw in the quarry, but turned his mind's eye back when the quarry was being made and depicts it in the time of antiquity, with apparently as much certainty as if he had been then and there present. He not only describes the work with the detail and positiveness I have shown, telling the periods to which it belonged and the race and culture of the men who did the work, but he assumes to decide upon the objects *not* there. He determines not only upon what was left in the quarry, but he decides with equal positiveness upon the ultimate purpose and intention of the workman and the future use and destination of the implements which had been transported elsewhere.

He describes in several places the leaf-shaped blade—the "third stage" of his process—straight and symmetrical, with edges as slightly beveled as consistent with strength, less than half an inch in thickness and shown in *i* to *p*, Pl. IV (my Pl. XIX), and says "when they were realized, the work of this shop was ended" (XX), "they, and they only, were carried away to destinies we may yet reveal" (p. 13). "No examples of the successful quarry products were left upon the ground" (p. 15). "All forms available for further shaping or immediate use were carried away as being the entire product of the shop * * * for final finishing" (p. 15). "This was a stage of advancement which made them portable and placed them fully within reach of processes to be employed in finishing, and that they had been carried away to the villages and buried in damp earth (*cached*), that they might not become hard and (or) brittle before the time came for flaking them into the forms required in the arts. The history of the quarry forms is not completed, however, until we have noted their *final distribution among the individuals of the various tribes*, until we have witnessed the *final step* in the *shaping process*—the flaking out of specific forms with a tool of bone—and their *final adaptation to use* and *dispersal over the country*," (p. 18).

"Having reached a definite conclusion that the blades were the *exclusively worked product* of the quarry," he "was led to investigate their subsequent history" (p. 18). The italics are mine. His investigation into the subsequent history of these objects led him to define a *cache*. "A 'cache' is a cluster or hoard of stone implements, numbering, perhaps, a score or more, secreted or deposited in the earth and never exhumed. Such hoards are frequently discovered by workmen in the fields," (p. 18).

Pursuing the "subsequent history" of these implements, I propose to go into the region round about Piney Branch, examine the aboriginal village sites of the District of Columbia, the fields containing these alleged secret hoards or caches, and the known places of aboriginal occupation within the neighborhood where these implements were said to have been carried, and see what have actually been found there, what of caches, what of leaf-shaped blades, and what of implements which had been subjected to the (fourth or other) "processes to be employed in finishing, when they were flaked into the final forms required in the arts" (p. 18), and I propose we compare the the objects actually found in these distant places, with what Mr. Holmes said would be found.

I look through my Department in the National Museum for the leaf-shaped implements which, according to the theory of Mr. Holmes, were made at Piney Branch and carried out to the homes of the Indians, their makers, in the District of Columbia, and I find the numbers insignificant; while, as to caches, the Bureau of Ethnology, through Prof. Cyrus Thomas, has lately made a catalogue of the "Known Prehistoric Works in the Eastern United States," among them deposits, hoards, or caches, and there is not a single cache reported from the District of Columbia, this, despite the statement of Mr. Holmes that "such hoards are frequently discovered by workmen in the field."

In the settlement of these questions, it is of high importance that so far as possible, facts and not guesses should be given.

I have taken the trouble to segregate the specimens in my Department in regard to material and locality and to ask a similar report from such private collectors as I could reach. The results I have given in the form of tables, and I have attempted in these to draw a sharp line between the implements which might, according to the Mr. Holmes' theory, have come from Piney Branch quarry, and those which did not.

No implement of *quartz*, found here or elsewhere came from the Piney Branch quarry, nor any of felsite or rhyolite, nor of argillite, shale or ferruginous sandstone, nor of flint, chert, or jasper; for Piney Branch was a quarry of quartzite only.

The following tables show the Aboriginal chipped stone implements from the District of Columbia and its neighborhood, divided according to material, form, locality, and mode of deposit, so as to show the number of quartzite leaf-shaped blades which might have come from Piney Branch quarry, according to Mr. Holmes' theory, and to compare them with those differing in these conditions, and thereby show what number did not come from Piney Branch.

TABLE I. CACHES, HOARDS OR DEPOSITS OF LEAF-SHAPED BLADES. ARRANGED ACCORDING TO LOCALITY AND MATERIAL.

Locality.	Quartz.		Quartzite.		Porphyritic felsite, Rhyolite.		Argillite shale, Fer. Sandstone.		Flint. Jasper. Chert.		[Totals.]	
	Caches.	No. of Implts.	Caches.	No. of Implts.	Caches.	No. of Implts.	Caches.	No. of Implts.	Caches.	No. of Implts.	Caches.	No. of Implts.
Bennings			1	7								
Red Bank			1	5							2	12
Jones Landing												
Piney Branch												
Little Falls					1	a8					1	8
Anacostia												
Pierce's Mills					1	a32					1	32
Piscataway, Md			1	b500							1	500
					1	25					1	25
					1	25					1	25
					1	26					1	26
South River, Ann Arundel Co., Maryland							1	114			1	114
South River, Ann Arundel Co., Md									1	7	1	7
South River, Ann Arundel Co., Md									1	4	1	4
Glenely												
Howard County					1	b100					1	100
Clarksville, Howard County.					1	52					1	52
			3	512	7	268	1	114	2	11	13	905

a, not leaf-shaped; b, estimated.

There have been found in the District (Table I) but two caches of quartzite, containing together only 12 leaf-shaped blades. These are according to Mr. Holmes' theory, "the entire product of the shops" (p. 15), which "had been carried away to the villages and buried in the damp earth (cached) that they might not become too hard and (or) brittle." This was a sorry product of so extensive a quarry as Piney Branch with the "500,000 pieces of waste and failures" found therein by Mr. Holmes; and must have been a sore disappointment to even the cynical and thriftless Indian.

Plate XXIII represents 20 specimens of a cache of 32 arrow or spear heads and leaf-shaped implements found near Pierce's Mill, Rock Creek. Most of the specimens are broken. They are of porphyritic felsite and, therefore, never had any relation with the quartzite quarry at Piney Branch.

Should it be urged that some of the leaf-shaped blades may not have been cached or, if so, that the caches had been disturbed and the blades scattered over the surface, I have made a schedule of these, (table II), which shows a total of 1,948 leaf-shaped blades found on the surface, not cached, of which 1,065 were of quartz, felsite, argillite, etc., and but 883 of quartzite. It

TABLE II. LEAFED-SHAPED BLADES—*NOT* CACHED.

Locality.	Quartz.	Quartzite.	Porphyritic felsite, Rhyolite.	Argillite, Shale, Fer. Sandstone.	Flint. Jasper. Chert.
	No. of Implts.	No. of Implts.	No. of Implts.	No. of Implts.	No. of Implts,
Bennings	4	300	100	100	
	2	30	2	2	1
Red Bank		100	100	40	
Jones Landing		50	20	10	
Piney Branch		15			
		17			
Little Falls	1	215	308	202	
Anacostia	2				
Pierce's Mill					
Cabin John		22	6		1
Piscataway					
U. S. Natl. Mus. Miscl. Collections, from D. C., generally.	148	134	5	10	1
	157	883	541	364	3

Total implements, quartzite,..........883
Total implements not quartzite,..........1065
1,948

is a part of Mr. Holmes' theory that "the working of such a quarry led *inevitably* to the production of blades *in numbers* (meaning in great numbers), and it follows that they were removed "in numbers" (p. 18), but my examination demonstrates the error of this theory, for it shows the blades of quartzite (which alone could have been carried from Piney Branch Quarry) to be in the minority.

Again, Mr. Holmes theorizes (p. 18) that a "time came for flaking them (the blades) into the final forms, knife-blades, scrapers, perforators, and arrow and spear points required in the arts." Therefore, I made still another table (III) to show any of these final forms which might possibly have been made *from leaf-shaped blades;* and, again, we find the theory not borne out by facts, for of all these leaf-shaped forms, numbering 2,634, only 694 were of quartzite and could have come from Piney Branch quarry. Thus, it appears that of the leaf-shaped blades found in the District and its environments, cached or not cached, the greater number have been of other material than quartzite, and must have come from other localities than Piney Branch quarry. Is not all this cumulative evidence of error somewhere in Mr. Holmes' theory?

TABLE III. ARROW AND SPEAR HEADS WHICH MIGHT HAVE BEEN MADE FROM LEAF-SHAPED BLADES.

Locality.	Quartz.	Quartzite.	Porphyritic felsite, Rhyolite.	Argillite, Clay slate. iron stone.	Jasper. Chert.
	No. of Implts.	No. of Implts.	No. of Implts.	No. of Implts.	No. of Implts.
Bennings	15	15	7	2	
	300	100	50	25	
		2			
Red Bank	200	75	300	50	
Jones Landing	100	50	50	25	
Piney Branch					
Anacostia		2			
Little Falls	102	200	304	50	
Falls Church, Va.,		37	1	8	
		4	1		
Piscataway	3				
U. S. Natl. Mus. Mis. Collections, from D. C., generaliy.	149	209	15	73	8 2
	869	664	728	223	10

Total implements, quartzite, ...694
Total implements not quartzite, ...1840
2534

There have been caches found adjacent in Maryland, and it may be suggested that these implements from Piney Branch might have been carried beyond the boundaries of the District of Columbia. But, unfortunately for this theory, the implements which have been found *en cache* in Maryland and adjacent to the District of Columbia are of porphyritic felsite, argillite, and other different material from those in the quarry at Piney Branch, and thus totally dissimilar from them. J. D. McGuire, Esq., of Ellicott City, Md., has furnished the best Maryland collection of these implements known (Table I) and he has kindly furnished me a sample series which have been photographed and are shown in Plate XXIV.

They show 8 caches—one of them 100 and one 114 specimens and a total of 365 specimens, not one of which could possibly have come from Piney Branch for one cache is of flint and jasper specimens, and one of argillite (similar to the leaf-shaped blades found by Dr. Abbot at Trenton), and six are porphyritic felsite or rhyolite.

The leaf-shaped implements found *en cache* in Maryland and some parts of Pennsylvania are, I believe, mostly either of argillite or porphyritic felsite. Several of these caches from the respective localities are to be seen in the Museum, and a single glance is sufficient to establish the absence of their relationship with the quartzite from Piney Branch.

We have now sought for the Piney Branch leaf-shaped quartzite blades at the home of the Indian, throughout the Districs of Columbia and the adjacent parts of Maryland where, according to Mr. Holmes, they were "buried in the damp earth;" andwe have sought in vain. Caches of such implements are not found within the District nor in its neighborhood. It may be hardy to declare a negative and to say that because these quartzite implements have not been found that they do not exist; but how much more hardy and, indeed, perilous must it be for Mr. Holmes to risk everything by declaring the existence of these caches when they have never been found.

The story told by the tables is not completed. Table IV tells of the "flaked implements, knife-blades, scrapers, arrow and spear points and perforators" (which Mr. Holmes says were common to the region), which were not from the Piney Branch quarry because not made of quartzite. This table shows 21497 such specimens. Table III, showed 2,534 specimens which might have been made from leaf-shaped blades,

TABLE IV. OTHER IMPLEMENTS, SUCH AS KNIVES, SCRAPERS, PERFORATORS, ARROW AND SPEAR HEADS, ETC., APPARENTLY *NOT* MADE FROM LEAF-SHAPED BLADES

Locality.	Quartz.	Quartzite.	Porphritic Felsite, Rhyolite.	Argillite, Clay, slate, Iron stone.	Flint. Jasper. Chert.
	No. of Implts.	No. of Implts.	No. of Implts.	No. of Implts.	No. of Implts.
Bennings	716	260	13	350	
	3000	4000	200	1500	
Red Bank	700	1200	1500	500	
Jones Landing	300	500	200	100	
Anacostia	35				
Piney Branch					
Little Falls	28	12	23	26	
	500	1000	2000	100	
Pierce's Mill			32		
Piscataway	25	75			
Falls Church	8	6		1	
U. S. Natl. Mus. Miscl. Collections. from D. C., generally.			3987		12
	1720	554	19	253	29
	7032	7607	3955	2830	41

Total implements *not* made from leaf-shaped blades.................. 21,497

RECAPITULATION.

Table I. Leaf-shaped blades, *cached*	865
Table II. Leaf-shaped blades, *not cached*,	1,948
Table III. Leaf-shaped blades, Impls. made from,	2,534
Table IV. Impls. *not* made from leaf-shaped blades,	21,497
	26,844

but of these, only 694 were of quartzite. The aggregate of these counts shows 24,031 (21,497 + 2, 534) specimens in these collections not made from Piney Branch quartzite leaf-shaped blades, against 694 which might have been.

Plate XXV shows how arrow and spear heads are, or may be, made from leaf-shaped implements. The five specimens at the top of the Plate are such. They were at one time leaf-shaped implements, and by the making of the notch and stem, they have been changed to arrow or spear heads, that is to say, they have been subjected to the second process which has changed them "into the final forms required by the arts" (p. 18). The four specimens at the bottom are leaf-shaped blades of quartzite found on the surface at Bennings, D. C., and might or might not have been the product of the quarry at Piney Branch. They form part of the 330 in Table II from that locality. Those in the middle are also leaf-shaped, found on the surface in the District or adjoining it in Maryland or Virginia, but are of quartz, argillite, shale, porphyritic felsite, all of them other material than quartzite, and so they could not have been the product of the quarry at Piney Branch. They form part of 541 in Table II and of the 1948 in Table V.

TABLE V. RECAPITULATION ACCORDING TO FORM.

	No. of Implts.	No. of Implts.	Implts. of quartzite, possibly from Piney Branch.
I.			
Caches, leaf-shaped,	865	865	*a*
Caches, not leaf-shaped,	40		12
II.			
Leaf-shaped blades. Surface, not cached,		1,948	883
III.			
Arrow and spear heads, etc., flaked implements which, from their form, might have been made from leaf-shaped blades,		2,534	694
IV.			1,589—Total which (according to Mr. Holmes' theory) might have been made in or come from the quarry at Piney Branch, out of a total 26,812.
Flaked implements, knife blades, scrapers, arrow and spear points, perforators which were judged, from their form and material, were not made from leaf-shaped blades of quartzite,		21,465	
	Total, all kinds,	26,812	

a. This omits the 500 from Piscataway because it is so far distant from Piney Branch and because we have no report of other implements from that locality. This cache was reported by Mr. Reynolds, who had but a single implement, given him by the finder, as a specimen.

In considering these tables and their bearing on the Piney Branch Quarry, we are to keep continually in mind that the sole and only material in that quarry was quartzite. There was no quartz pophyritic felsite, rhyolite, shale, ferruginous sandstone, flint, jasper or chert found in any of its deposits, and all implements made from any of these materials are to be excluded from consideration because impossible to have come from that quarry. Keeping this in view, these tables show the following state of facts: Among all those implements from the District of Columbia, but two caches of quartzite were found containing together only 12 leaf-shaped blades of 1.948 leaf-shaped blades not cached, only 883 were of quartzite; of 2,534 common implements, such as arrow- and spear-heads etc., which from their form might have been made from leaf-shaped blades, only 694 were of quartzite, making a total of 1.589 quartzite implements which, according to Mr. Holmes' theory, *might* have come from the Piney Branch Quarry, out of a total of 25,815 implements examined.

Out of all the "1,000 turtle-backs" (p. 14) gathered by Mr. Holmes, their "500,000 brothers and sisters' (p. 12) left, and the "millions of worked stone and unshaped fragments" (p. 7), all "refuse" (p. 12), "waste, failures" (p. 14), of which "these quarries on Rock Creek are the main source," all being done to produce these leaf-shaped blades to be carried away and buried (cached) in the damp earth "that they might be preserved to be made into the final forms required by the arts" (p. 18).—Out of all this toil, the result found up to date is but 2 caches with 12 blades. "The mountain was in labor," etc., etc. Out of a total of 26,812 implements reported in the collections mentioned, but 1,589 were of quartzite leaf-shaped blades that *could have come* from the Piney Branch quarry. Yet the leaf-shaped blades were, according to Mr. Holmes, the "entire product of the quarry" (pp. 13 and 15). What a deal of sack for a pennyworth of bread.

. Mr. Holmes' theory that the leaf-shaped blade was the sole product of the quarry workshop, to be afterwards "flaked into the final form" of the common implements of the region, be correct, then the problem may be stated according to the arithmetical law of proportion, as follows: If 1,589 leaf-shaped *quartzite* blades, cached and not cached, finished and unfinished, have been produced from Indian toil and exertion in making the "500,000 turtle-backs," and the "million of worked stones which now occupy the site" (p. 7), all of which are wastes and failures; then how much toil and exertion, and how many millions of worked stones, wastes and failures, would be required to produce the 26,812 specimens reported in the collections mentioned? I have inveighed against the speculation by which we sometimes attempt to determine, what a great amount of labor the Indian would do for the accomplishment of so little, sometimes the reverse; but we may fairly assume that the aborigine was not such a consummate idiot as to open a quarry as large as this at Piney Branch, and do as much hard work as must have been done there, with the paltry outcome of the insignificant number of quartzite implements shown in the aggregate collections form the District of Columbia. To complete the information on this branch, I have introduced the consolidated tables VI and VII showing the subdivisions according to material and locality.

TABLE VI. RECAPITULATION ACCORDING TO MATERIAL.

Quartz	8,058
Quartzite	9,674
Porphyritic felsite, rhyolite	5,478
Argillite, shale, fer. sandstone	3,541
Chert, flint, jasper	64
	26,815

TABLE VII. RECAPITULATION ACCORDING TO LOCALITY,

Bennings	11,108
Red Bank	4,765
Jones Landing	1,405
Piney Branch[1]	32
Little Falls Church Branch	5,071
Pierce's Mill	32
Anacostia	39
Piscataway, Md	603
Falls Church	66
Mr. McGuire's 8 caches from Md	353
District of Columbia, Museum Collection, locality unidentified	3,341
	26,815

[1] Mr. Holmes' objects are not included.

III.

Mr. Holmes' theory is that the sole implement sought to be obtained by the workman from this quarry, was the thin, leaf-shaped blade, the result of what he calls the third process. His processes Nos. 1 and 2 for making turtle-backs were according to his theory, only designed to lead up to process No. 3, which should produce the thin, leaf-shaped implement.

I think this conclusion does not accord with the facts. Whatever may have been the intention of the workman in making the single or the double turtle-back by processes 1 and 2, (figs. 1, 2, p. 878,) I feel constrained to believe that these were not stages in the production of leaf-shaped implements. I see no evidence of it. I know of no reason why the aboriginal man might not as well have been making the turtle-back for its own sake. It is found all over the United States, it corresponds in a remarkable degree with prehistoric implements from all parts of the world, and no reason is given why it should not have been as much an implement as were the leaf-shaped blades. I do not believe it possible, by any process suggested by Mr. Holmes, nor by the methods apparent from the examination of the leaf-shaped implements themselves, that they were made from the double turtle-back. Mr. Holmes himself is hazy and uncertain about his third process. It consisted, he says, p. 12, " in going over both sides a second and, perhaps, a third time, securing, by the use of small hammers and by deft and careful blows upon the edges, a rude and symmetrical blade." This might mean chipping, or it might mean pecking, hammering or battering. But the process of pecking, hammering or battering is an abrasion by which the substance is worn away grain by grain, passing off in dust; and we know that the leaf-shaped implements were all made by chipping or flaking, and not by pecking, hammering or battering.

I think I may defy Mr. Holmes to make the double turtle-back into a leaf-shaped implement by the process of chipping without treating it as an natural unworked stone and splitting it down through its center regardless of the edge which had been before made, thus destroying its edge and with it the implement. In this operation, the double turtle-back has no advantage over a natural pebble, and it must be treated as such. The operation of striking the turtle-back on the edge to split it and thereby reduce its thickness, has the effect of reducing its size correspondingly. It will have to be reduced considerably when made from the natural pebble, but it will be subjected to a double reduction in size when made from the turtle-back. The turtle-back and the leaf-shaped implement are practically the same size, except the latter is only $\frac{3}{8}$ or $\frac{1}{2}$ inches in thickness. This reduction in thickness cannot be done without striking the turtle-back on its edge (Plate XXVI) thus working its total destruction and treating it as if it were an original pebble. The plate will make this apparent.

This argument demonstrates that the pretended evolutionary series of Mr. Holmes set forth in his Plate IV, (My Plate XIX) is incorrect. While all the implements are there truly represented, yet they do not form a continuous series. The leaf-shaped implements in the bottom row, "3rd stage, both sides re-worked," could not be made from the "turtle backs" in the two upper rows. Therefore, I deny Mr. Holmes' fundamental proposition. I am fully persuaded that the maker of these implements, whatever else he intended to do, did not intend or attempt to make the leaf-shaped blades out of the turtle-back, or at least that turtle-backs were not a stage in the process of making leaf-shaped implements. If my proposition in this regard be true it breaks Mr. Holmes' theory in the middle.

IV.

Mr. Holmes Says, p. 17, "that to a limited extent, the rude forms—the turtle-back and its near relation—are also found widely scattered over the Potomac Valley outside of the shops on the hills." The suggestion is that these came from this quarry or from similar quarries, and he charges flat-footed that they were the "rejects," "refuse," "debris," "failures."

In January, 1888, the Smithsonian Institution issued a circular, No. 36, asking of its correspondents throughout the United States and Canada, for information as to the number of these implements in their respective localities. This was accompanied with elaborate description and many illustrations, so there should be no mistake in their identity. Answers were then received, from every state in the United States and some from Canada. A consolidation of these answers, with briefs, was published in the Annual Report of the U. S. National Museum for 1888, pp. 766–702, wherein the number reported up to that time is stated at 8,502. This has been largely increased since, and if now subjected to actual count, would be multiplied many times. Many of the specimens, those of quartz and quartzite or other refractory material, were rude like those from Piney Branch, Holmes' Pl. IV (Pl. XIX), but those made of flint or other homogeneous material which chipped easily, were smooth and clean, and on comparison with paleolithic implements from Europe could scarcely be distinguished ; those from Texas and Utah especially so.

Bearing on this question, I chose 72 specimens out of some hundreds of the "double turtle-backs," as Mr. Holmes calls them, collected by Mr. Wm. Hunter from the neighborhood of Mt. Vernon, Va., and have had them photographed and made into a Plate XXVII. The specimens on this plate could be duplicated from almost any state. A comparison will show that the same implements are found in every state in the United States. The hammer-stone in the center happens to have been from Piney Branch. The introduction of this is to show that "the double turtle-backs" are found elsewhere than at Piney Branch in considerable numbers; that they are not isolated and sporadic, and that they are shapely and regular, even when made from the refractory quartzite, so much so as to demonstrate them to have been intentional and not accidental forms, and were neither "rejects," "refuse," nor "failures."

V.

Mr. Holmes refuses to consider the implements as furnishing any evidence of their own antiquity. He refuses to compare them with European or other known paleolithic implements, or to accept them as paleolithic because of any similarity of form, appearance, or mode of manufacture. I agree that all existing evidence should be presented and I suppose this has been done in the present case. Accepting this proposition only for the sake of this argument, my reply is that he then has no evidence of antiquity of any portion of the quarry.

Mr. Holmes contends that this great quarry, nigh a quarter of a mile square, had been dug over and excavated, (as is shown by the section, his Plate I), to an average depth of six feet and in many places to eight and nine feet, along the entire hillside and around its point. He contends that every cubic foot of this section had been dug over, in places to the bed rock, and the stones and clay handled and worked. All the boulders and earth had been loosened and shovelled, and the entire mass re-deposited by the diggers, as the work progressed. Mr. Holmes not only admits this anterior disturbance, but claims it as giving the chief importance to his discovery. His Plate III, a photograph of the quarry face, is introduced by him to demonstrate this prior excavation.

But all this has naught to do in showing the antiquity of the quarry. If he refuses consideration and comparison of the implements and objects found therein, there is nothing to show that all this excavation, trench making and stone breaking may not have been done in comparatively modern times. There is nothing to indicate its antiquity unless it be the appearance of the surface, and this is only by the thickness of soil and the size of the trees; and both of these may have been, the latter must have been, commenced since the early part of this century.

If these trenches, of such length, depth and extent, had been dug by the modern Indian, as declared by Mr. Holmes, we can scarcely imagine that it would have been filled up, raked down, and smoothed over to a regular slope as it now is and was when the trees began to grow on it. Mr. Holmes' Plate I shows the regularity of this slope correctly. Where Mr. Holmes' greatest trenches were dug, the slope from the top of the hill to the bottom is regular and true without any ridge or hollow to indicate an open trench or pit left by the Indian who is alleged to have made it. By whomsoever that quarry was opened and whoever dug those trenches, they were afterward filled up and smoothed over, leaving no break or depression affecting the regularity of the outline of the hill-side. Our knowledge of the modern Indian teaches us that he would not perform this, to him, useless labor. This profound disturbance (the French call it *remaniement*) of the bowlders, clay and earth of the section, leaves no stratification and destroys all evidences of the age of the deposit. There is no fauna.

This, with the item just mentioned, leaves us without evidence as to the antiquity of the quarry work except as furnished by the implements themselves. Their rejection as evidence would leave the question of its antiquity unanswered, and would render the quarry of slight archaeological value. If Mr. Holmes had found stone axes, hatchets or gouges, spear or arrow heads, pieces of pipes, or fragments of pottery, these would have served as evidence of Indian origin, but the utter absence of any of these leaves the Indian theory unsupported; It is a canon of prehistoric archæology, verified by every worker in the field, that no such extensive work as claimed for this quarry could have been done by prehistoric man without having left some of his tools, implements or utensils. But here not an implement or weapon fragment of polished or smoothed stone, not an arrow or spear head, nor pottery, was found. Mr. Holmes says (p. 13), "Only one was found * * * (with) a rude stem worked out at the broad end. This specimen was found near the surface. Two other pieces found at considerable depth exhibit slight indication of specialization of form, which, however, might have been accidental." And this was all.

If it be said that this was a quarry for bowlders with which to make these implements, and that their finding in the disturbed and disarranged deposits is evidence of this fact, I reply, that the surface of the neighborhood is covered with the same kind of bowlders and many of the same kind of implements, and there is no more evidence to show that the implements were made in the quarry than there is that they were made on the surface. For anything shown in the quarry, the whole batch of turtle-backs, double and single, flaked stones, waste, debris, etc., etc., might have been originally on the surface, made there, possibly, in times of antiquity and been tumbled into the ditch, whenever it was filled up.

VI.

Mr. Holmes' paper is radical and final. He not only determines every proposition presented by the implements found at Piney Branch, but he determines them finally, and further discussion is useless. According to him, we know (from his investigation) all about these implements, all about the man who made them, the race to which he belonged, his use of tools, his machinery and mode of manufacture, his transportation, and a large suggestion concerning his culture. If his conclusion be correct, then Mr. Holmes has determined the entire history of this man as well as that of the implements themselves. His statement is no longer a theory, it is a demonstrated proposition, a proved problem, the work is finished and the book is sealed. It is submitted that this is a greivous mistake.

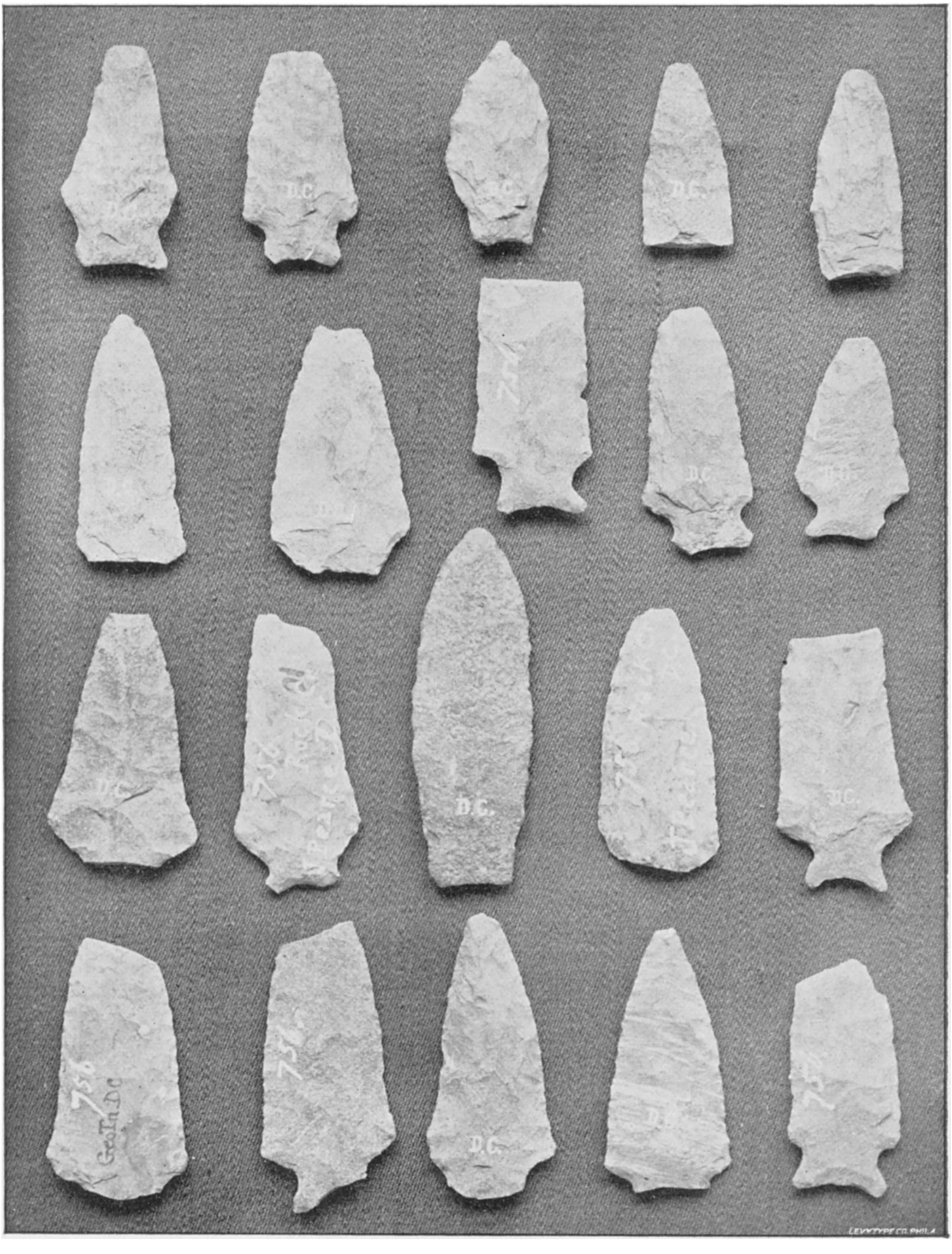
VII.

I do not attempt any argument to account for this quarry or to explain either the manufacture or use of its implements. It is not my discovery, and I am in no wise bound to sustain or uphold it.

In the discussion, I have said no word about Paleolithic man in America. That question is not involved here. I have elsewhere set forth my opinion on that subject, and I may enlarge upon it on some other occasion, but not here or now.

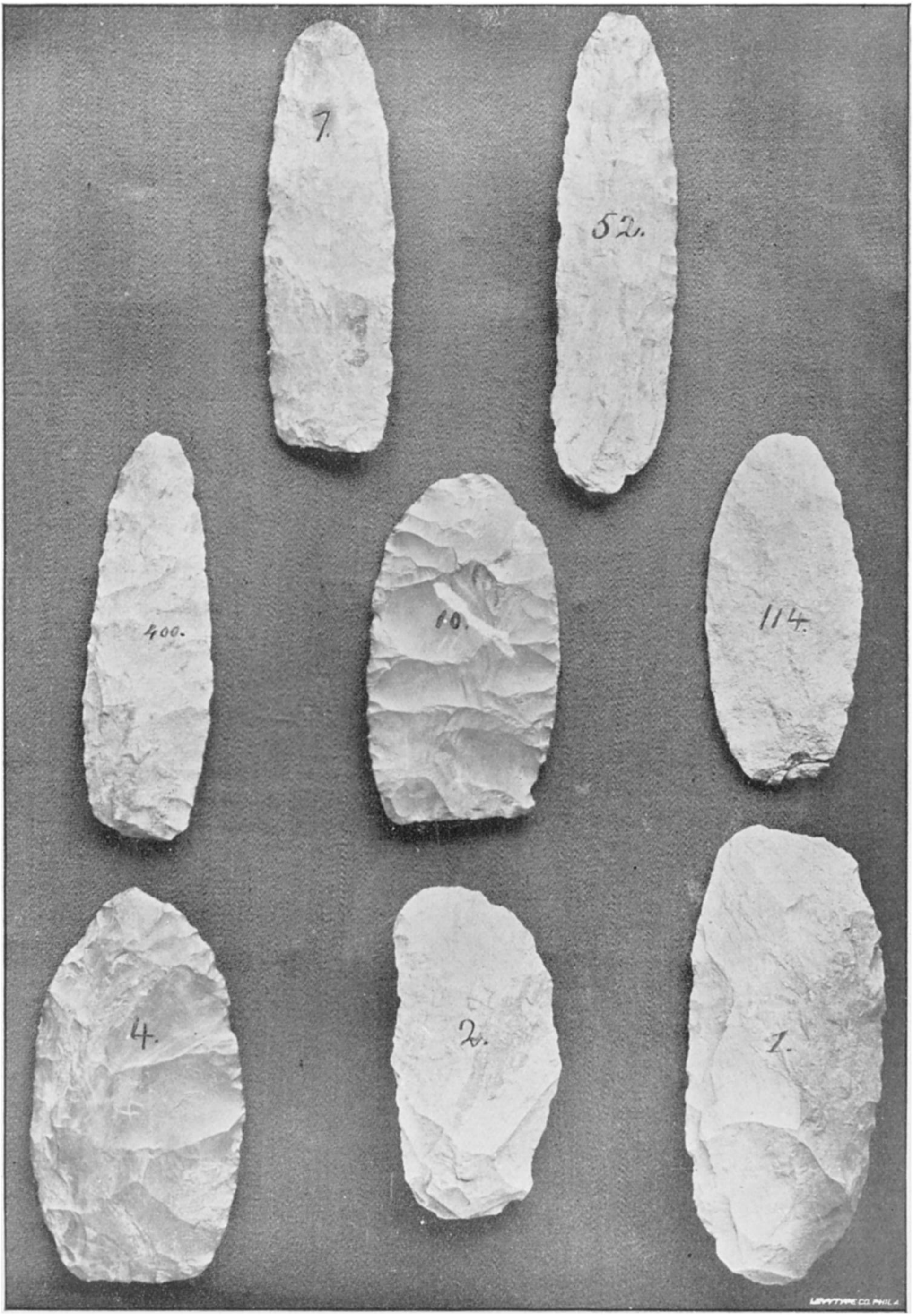
I have sought only to criticise the theories of Mr. Holmes in reference to the quarry and its implements, and to show what I deem to be the errors in his conclusions, and in doing so I have avoided personalities. I have indulged in no maligning or abusive words, have conceded to him the most honorable intentions, and a truthful rendering of all his facts; and professing for him the kindest and most friendly feeling, I assert that in what I have said, I have given my own fair, and, as far as possible, unbiased opinion and judgment, being moved thereto solely in the interest of truth and science.

PLATE XXIII.



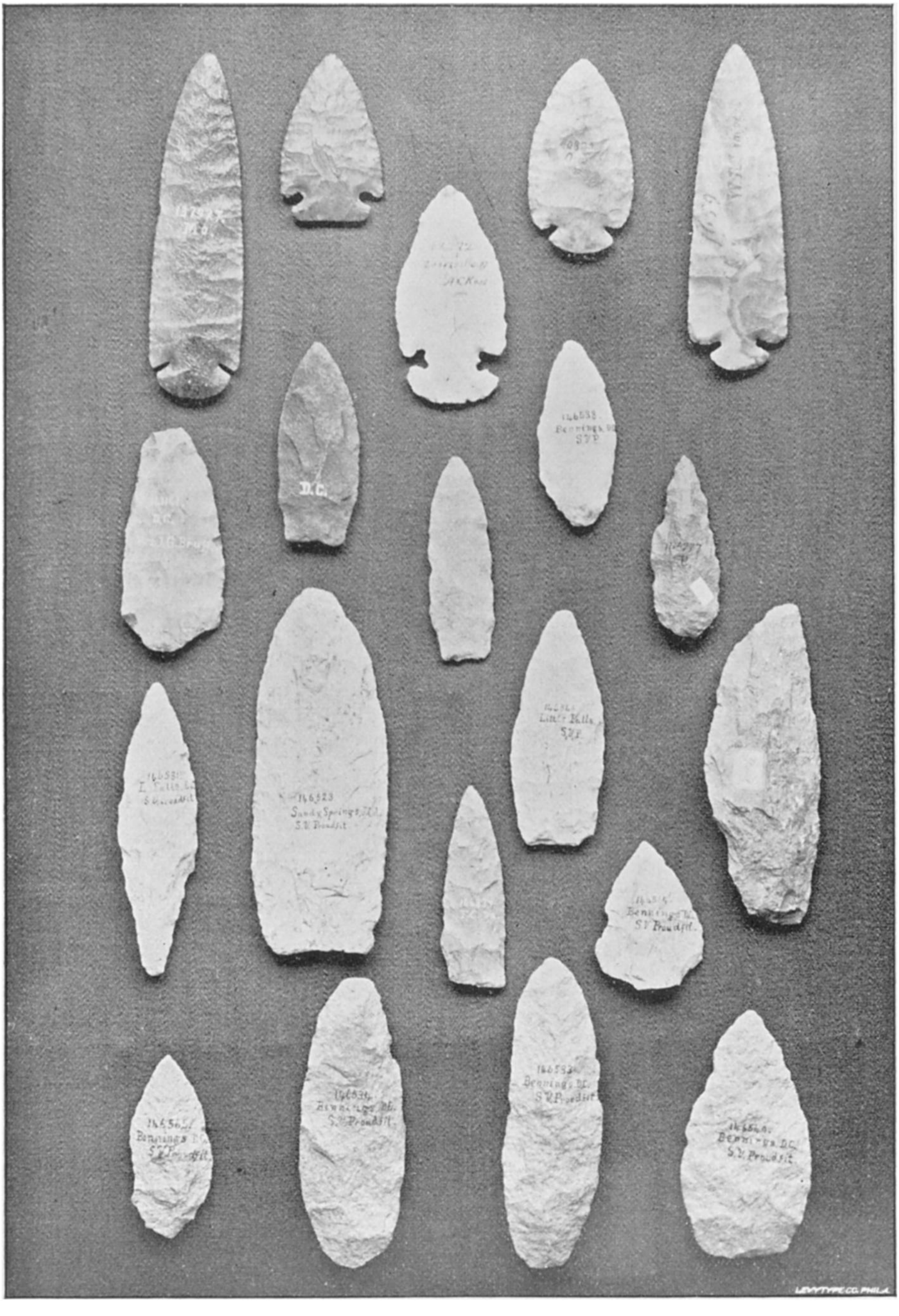
Specimens from a cache found near Pierce's Mill, Rock Creek, D. C. Porphyritic felsite.

PLATE XXIV.



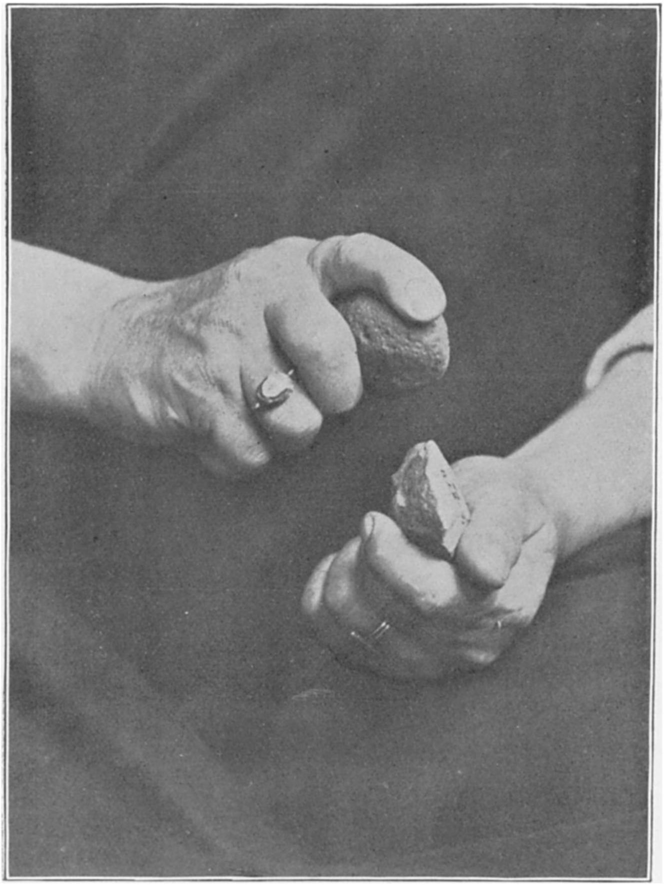
Representatives of eight caches of leaf-shaped implements found in Maryland. None quartzite.

PLATE XXV.



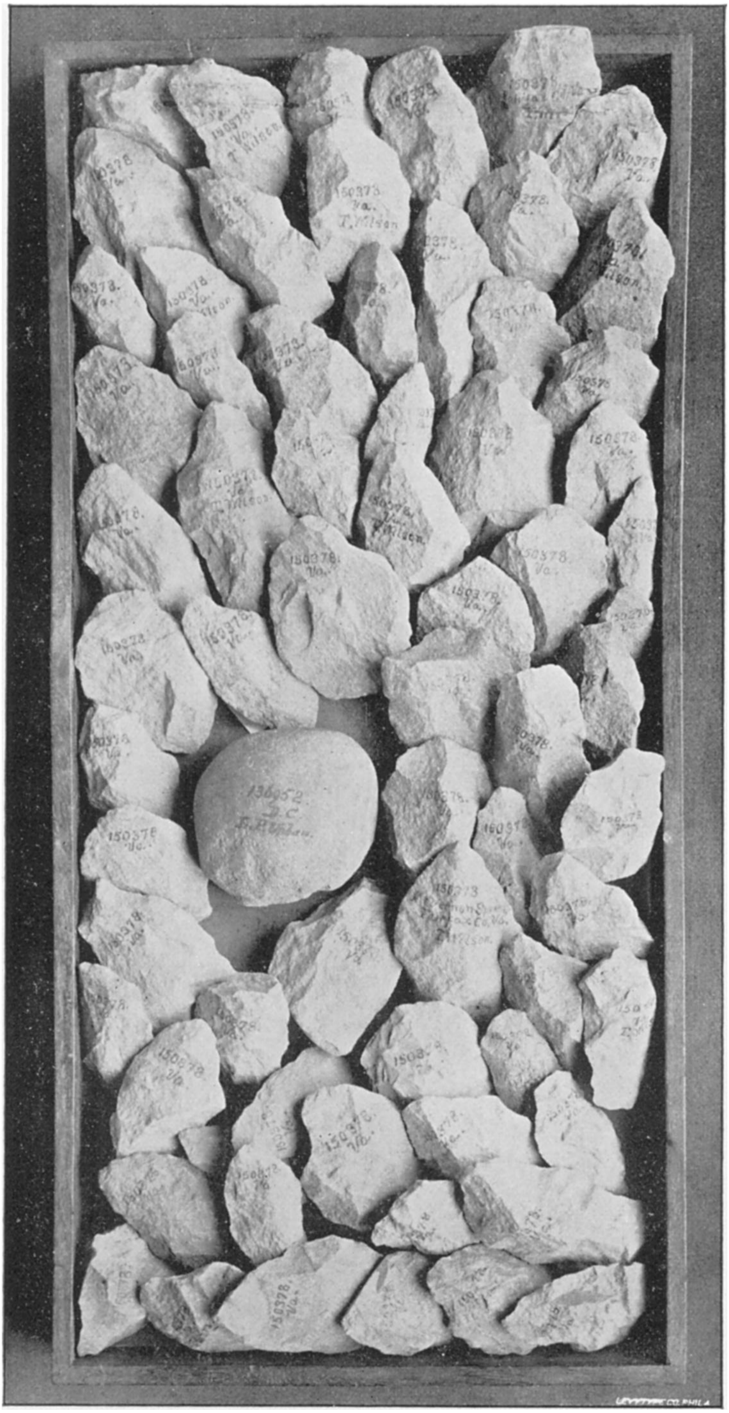
How some leaf-shaped implements are made into "final forms," and some not.

PLATE XXVI.



Leaf-shaped implements cannot be made from "turtle backs" without first destroying them.

PLATE XXVII.



Double "turtle backs" of quartzite found at Mt. Vernon, Va. Samples of thousands, not from Piney Branch Quarry.